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**November 20, 2013**

## **Scaling the Uptake of Agricultural Innovations: The Role of Sustainable Extension and Advisory Services**

### **Speakers**

Suzanne Poland, *USAID Bureau for Food Security*

Paul McNamara, *University of Illinois at Urbana -  
Champaign*

Brent M. Simpson, *Michigan State University*

### **Facilitator**

Julie MacCartee, *USAID Bureau for Food Security*

## Upcoming Agrilinks Events:

- Learning Event | November 21 | [Women's Empowerment in Agriculture Index](#)
- #AskAg Twitter Chat | November 26<sup>th</sup> | Development Credit Authority
- Ag Sector Council | December 11<sup>th</sup> | Farmer 2 Farmer



## **Paul McNamara**

University of Illinois at Urbana-Champaign

Paul E. McNamara serves as Director of the USAID-funded Modernizing Extension and Advisory Services (MEAS) Project. McNamara is an Associate Professor in the Department of Agricultural and Consumer Economics, the Division of Nutritional Sciences, and the Department of Family Medicine at the University of Illinois at Urbana-Champaign. He also serves as an Extension Specialist with University of Illinois Extension. McNamara holds a Ph.D. from the Department of Applied Economics at the University of Minnesota and an M.P.P. from the Harvard Kennedy School. He received his B.A. in Economics from Wheaton College (Illinois).



## **Brent M. Simpson**

Michigan State University

Brent M. Simpson is an Associate Professor in International Development, Department of Agriculture, Food and Resource Economics at Michigan State University. He currently serves as the Deputy Director of the USAID MEAS Project, manages MSU's involvement in two USAID funded projects in Senegal, and is leading an agricultural climate change adaptation study for USAID in the Sahel. Prior to joining MEAS he worked for the Africa Rice Center, the Institute of Social Studies in The Hague, and has carried out consultancies and advisory work with the CGIAR, DFID, FAO, MCC, USAID, World Bank, and WWF.

# Scaling the Uptake of Agricultural Innovations: The role of sustainable extension and advisory services

**Ag Sector Council Webinar  
20 November 2013**

**Brent M. Simpson**  
Michigan State University  
Deputy Dir. Modernizing Extension  
and Advisory Services (MEAS) Project



# Major Themes Covered

- Issues to think about
- Important concepts
- Application of extension principles in practice

# Key Questions

- How do we define scale when thinking about the adoption of agricultural technologies and practices?
- How do we design for the potential of scaling the up-take of agricultural innovations?
- How do we sustain the momentum of scaling behavior change once it is initiated?

# Place-based Nature of Agriculture

**Natural site:**  
Where species are able  
to grow.

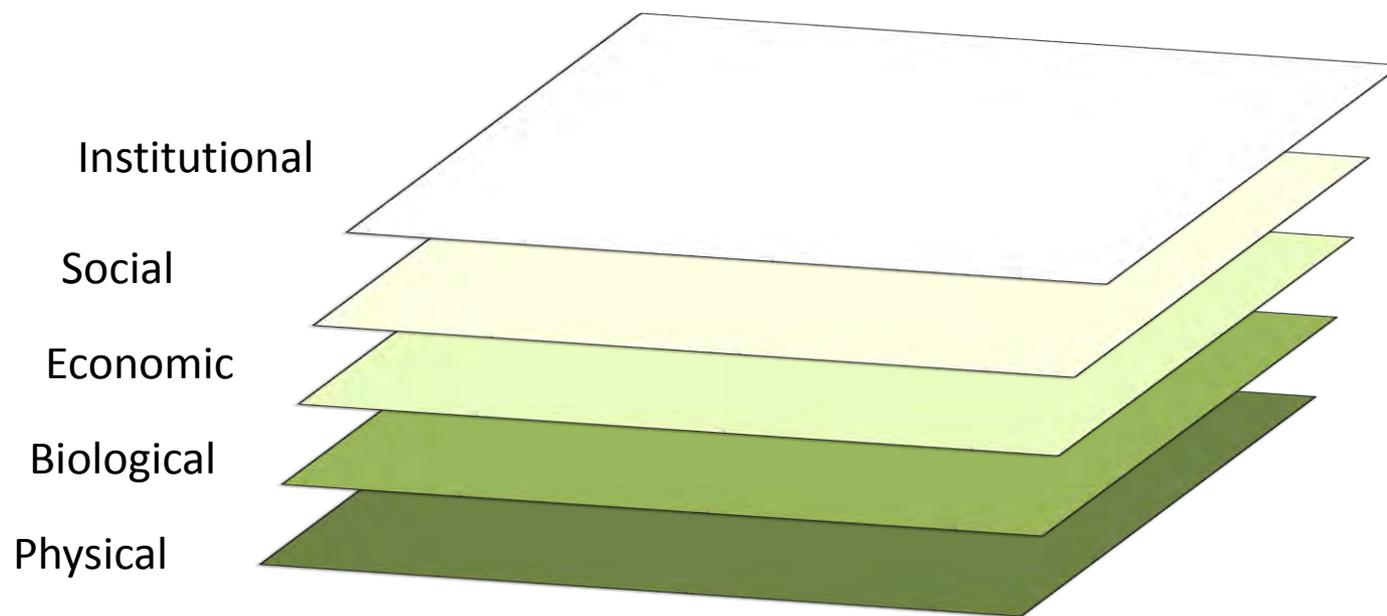
**Socio-economic site:**  
Where species are  
allowed to grow

- Elimination
- Addition
- Manipulation of  
the environment



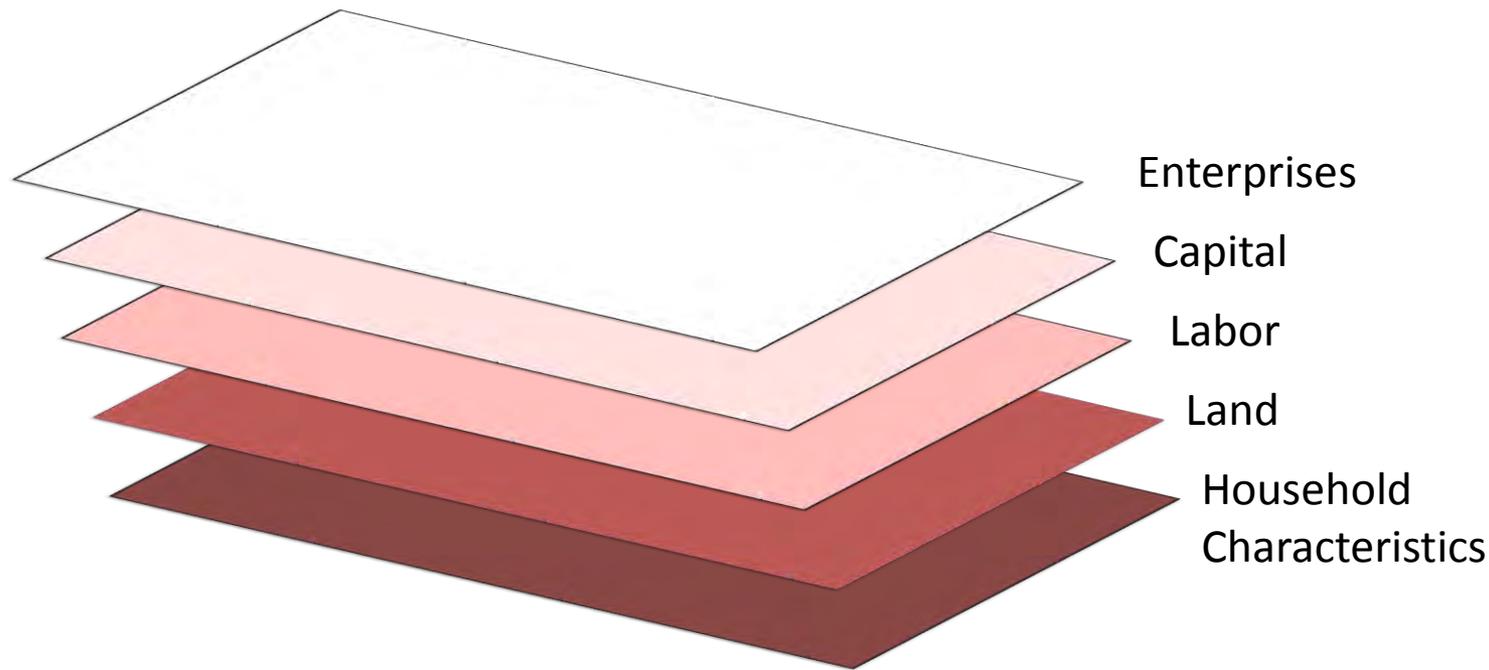
Source: von Maydell, 1990

# The Farming Environment



Source: adapted from Shaner et al., 1982

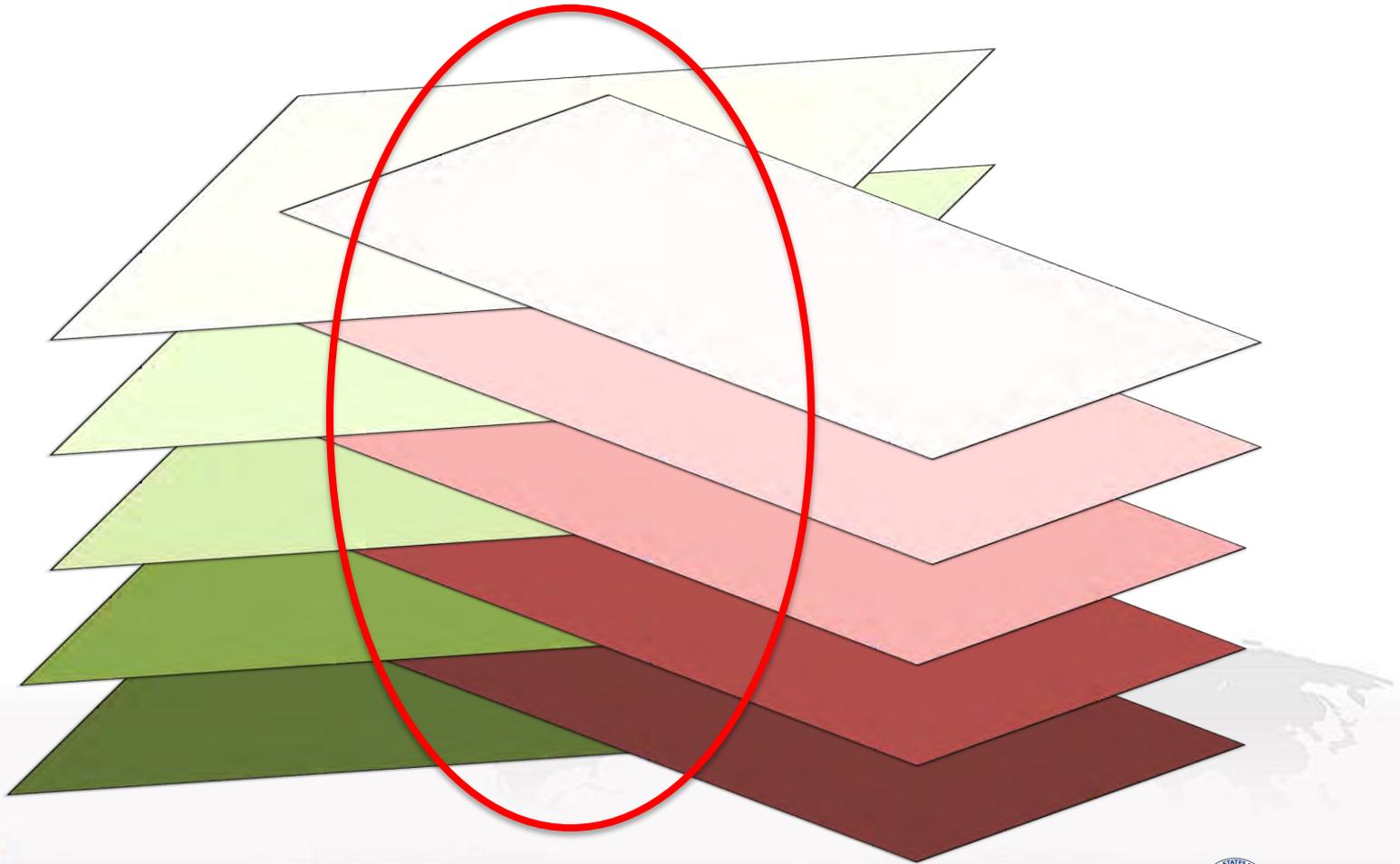
# Farming System Characteristics



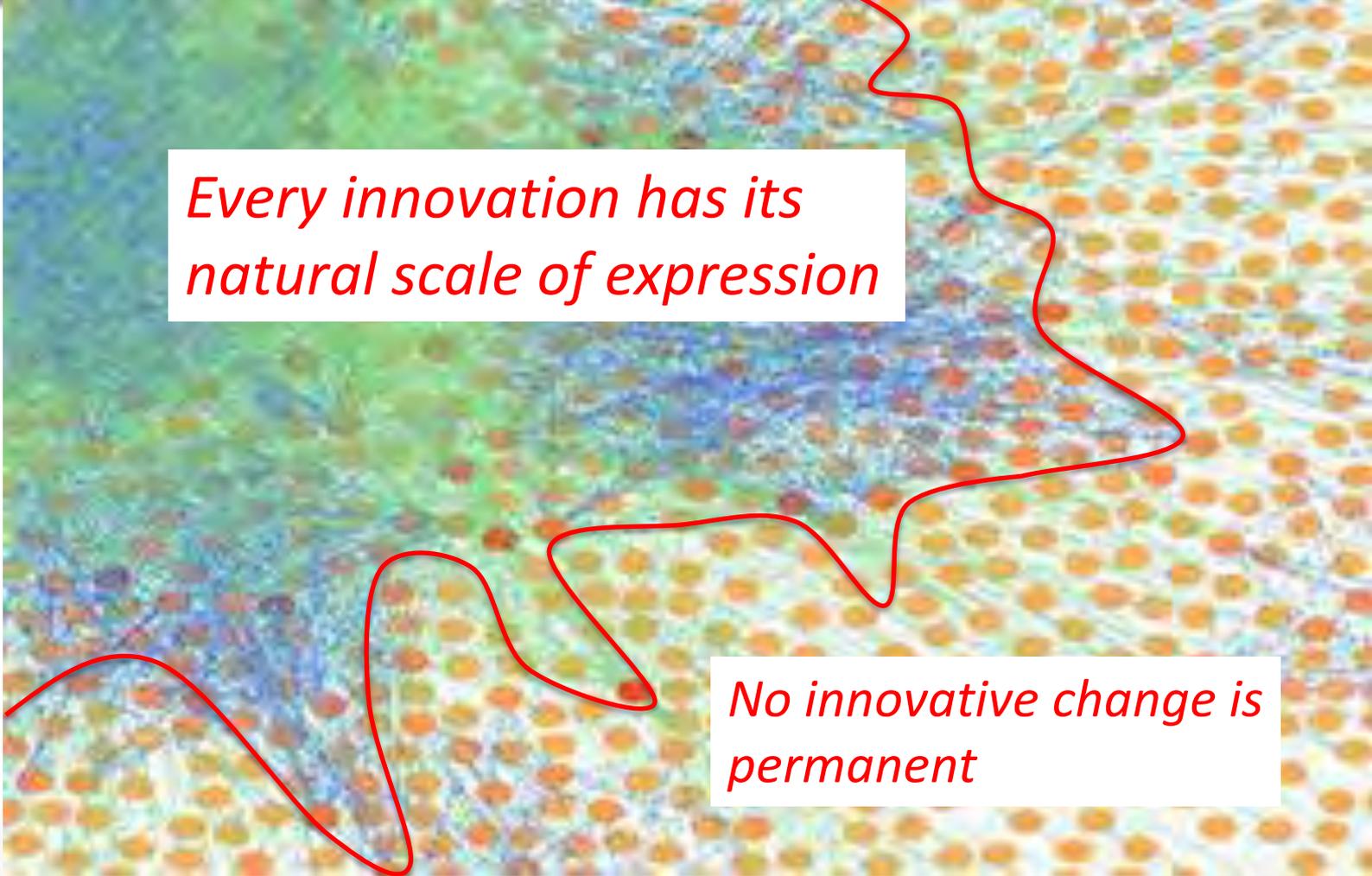
Source: adapted from Shaner et al., 1982

# Adoption Domain

“recommendation domain”



# Essential Nature of Scale in Agriculture

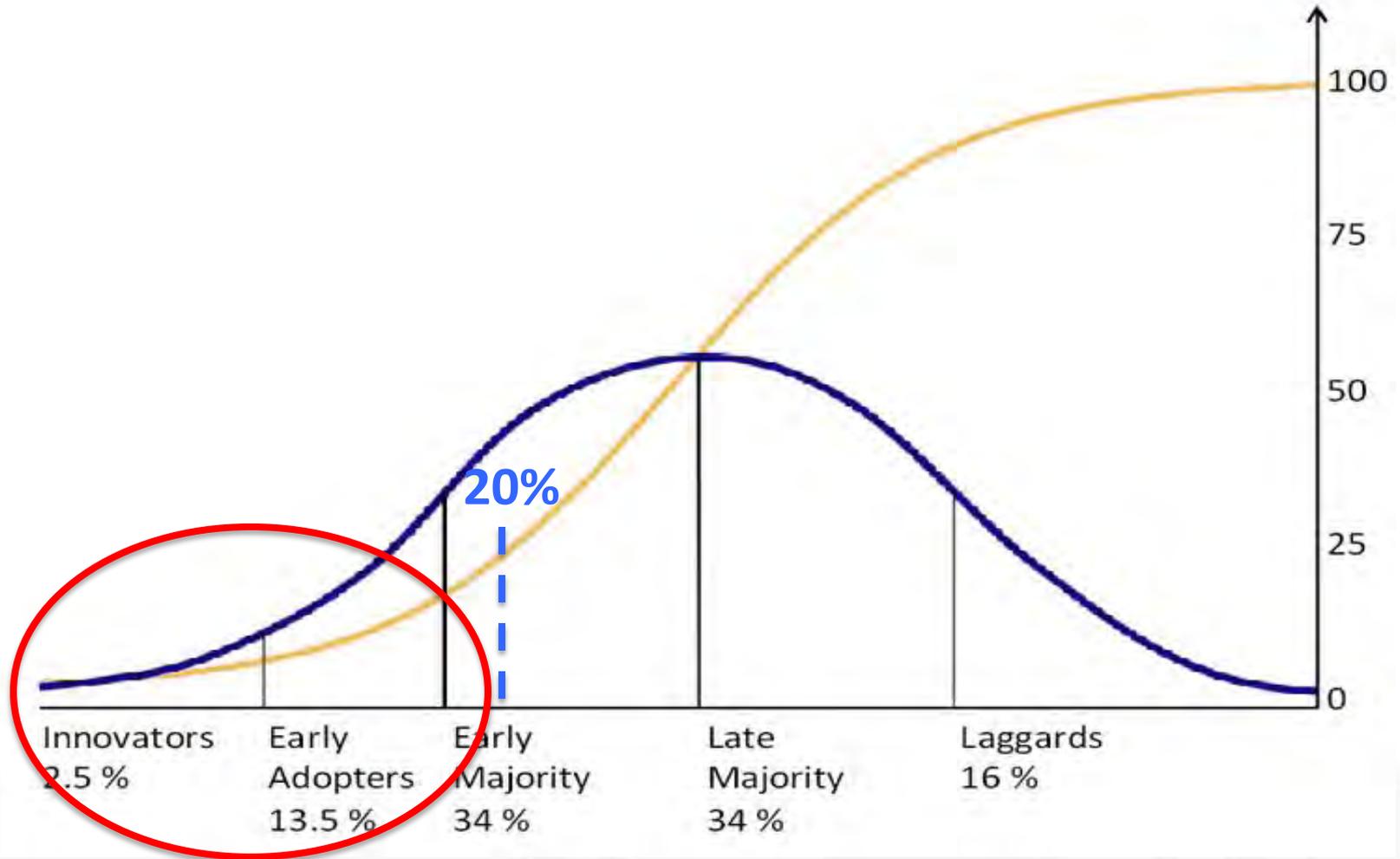


*Every innovation has its natural scale of expression*

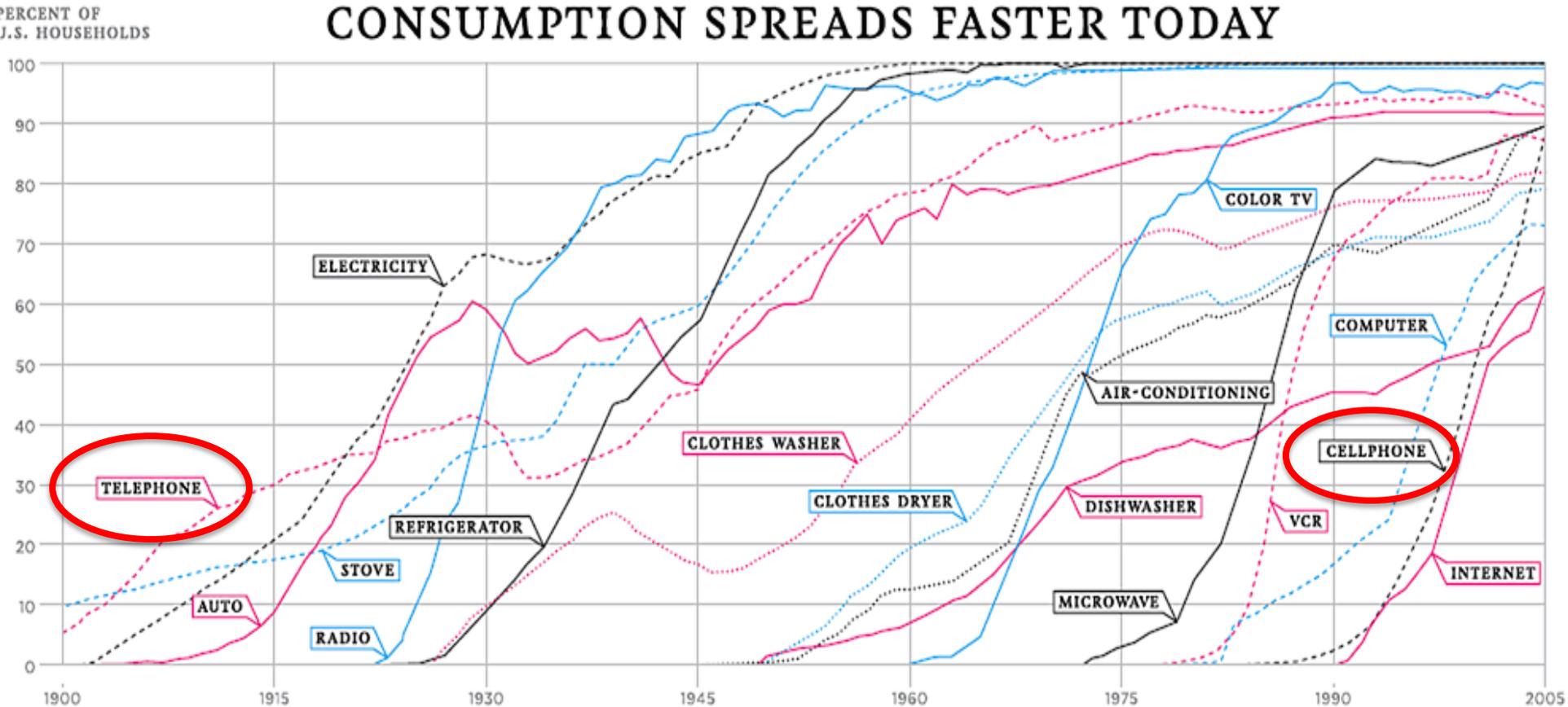
*No innovative change is permanent*

Image Source: [http://www1.eere.energy.gov/solar/sunshot/seeds\\_sandia.html](http://www1.eere.energy.gov/solar/sunshot/seeds_sandia.html)

# The Diffusion of Innovations

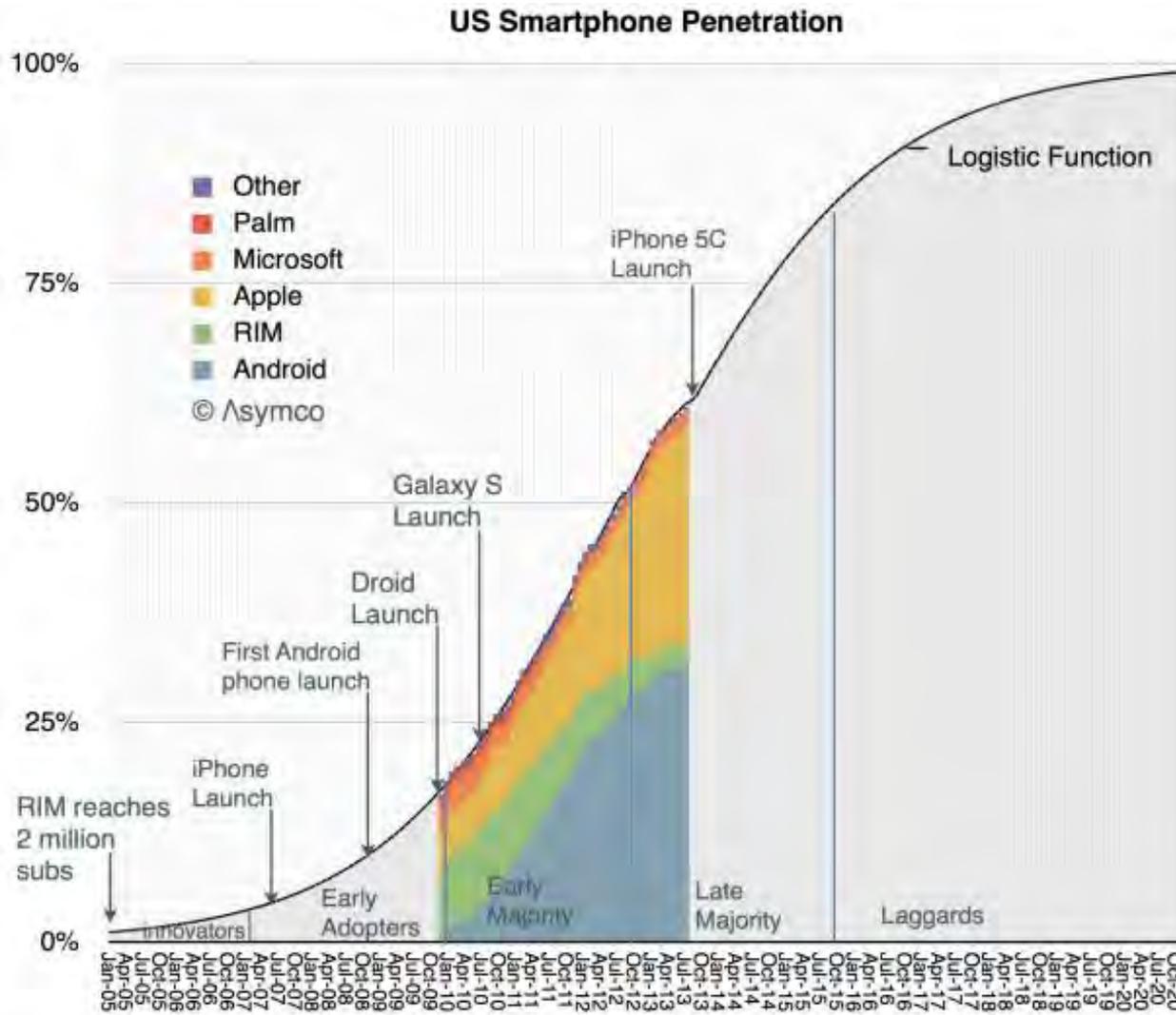


# Individual Pathways



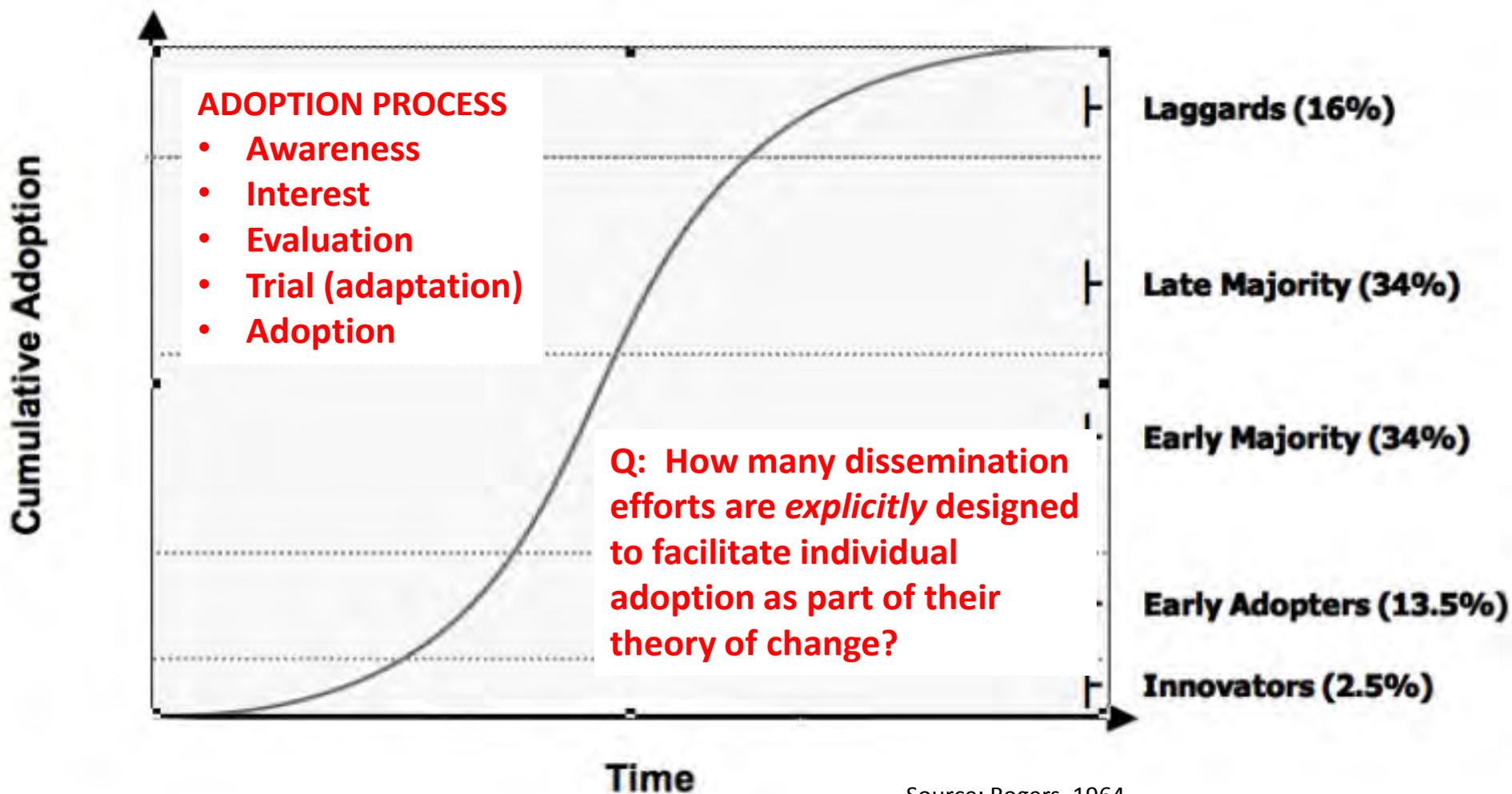
Source: Felton in Cox and Alm, 2008

# Multiple Sources/Multiple Providers



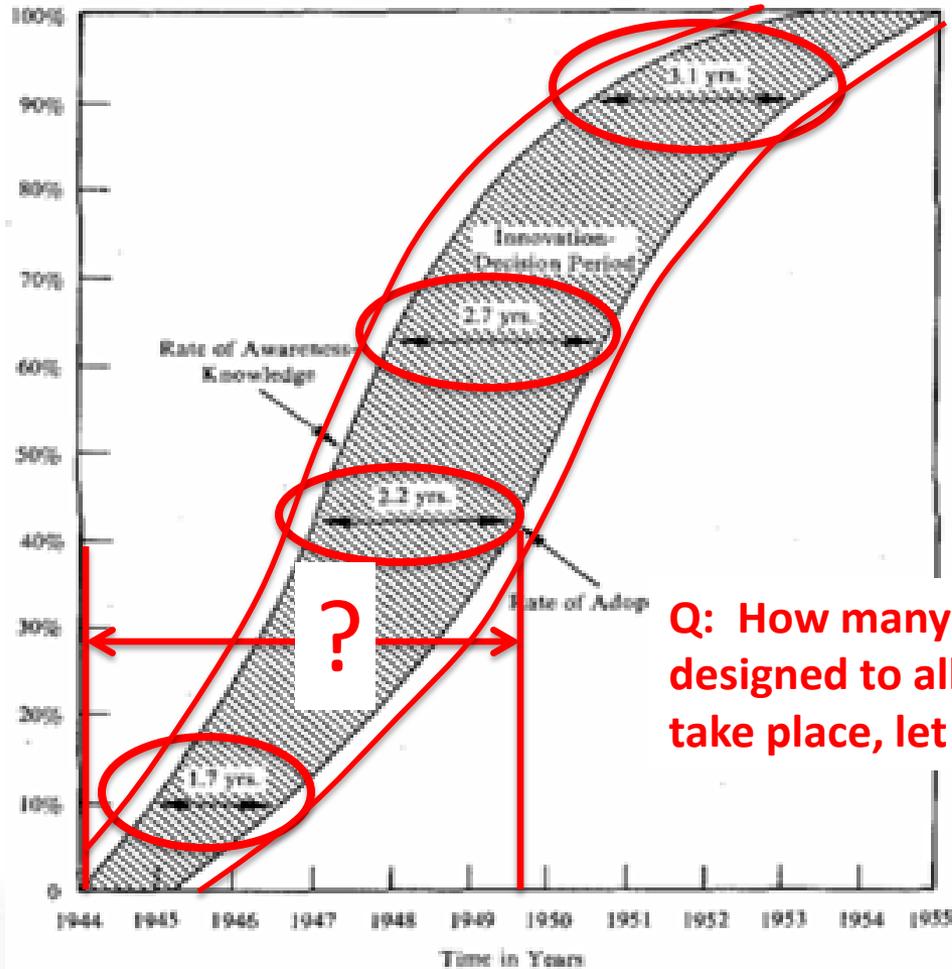
Source: Dedire, 2013

# Process of Adoption



Source: Rogers, 1964

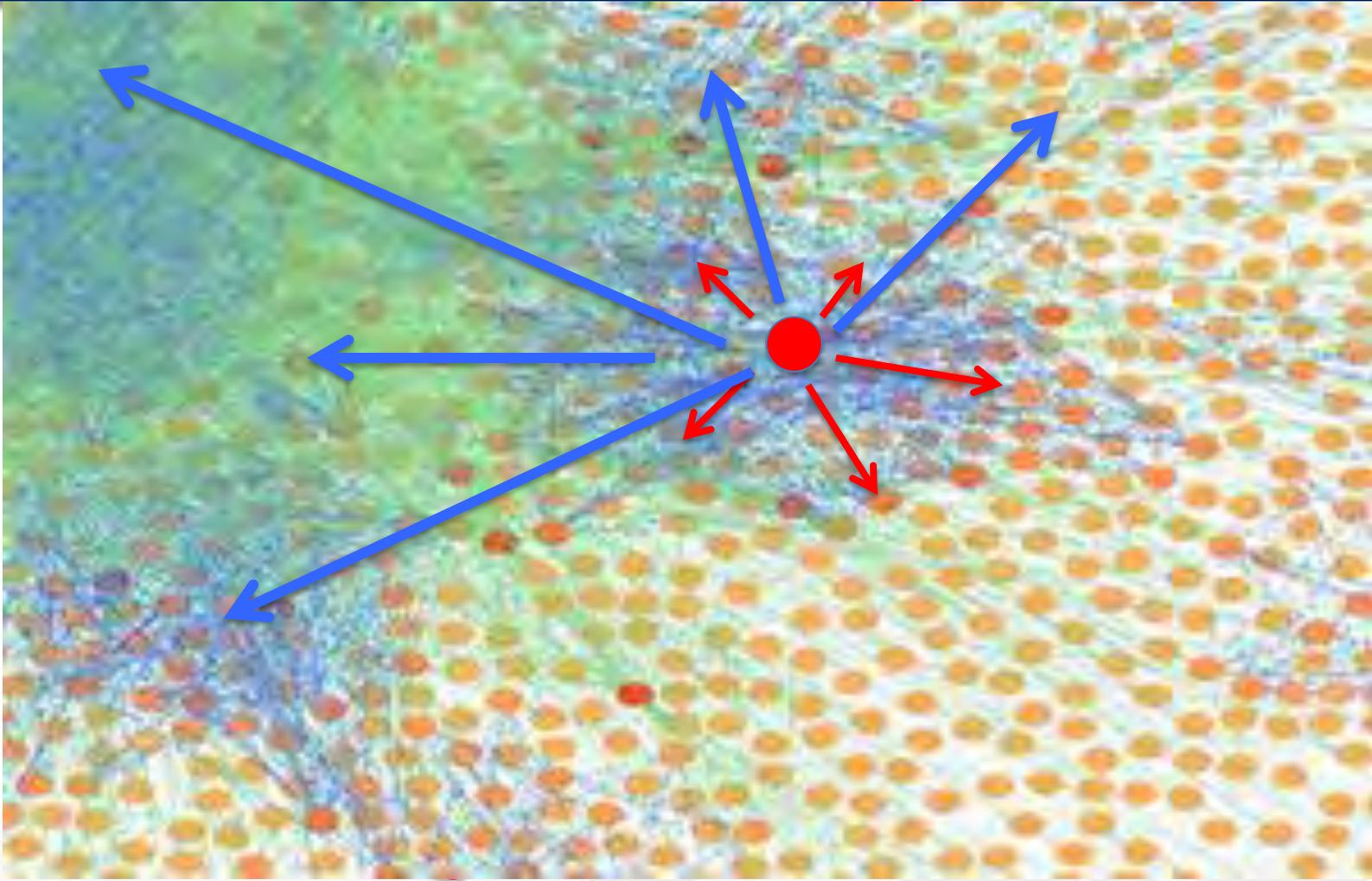
# The Time Dimension



**Q: How many projects are designed to allow adoption to take place, let alone takeoff?**

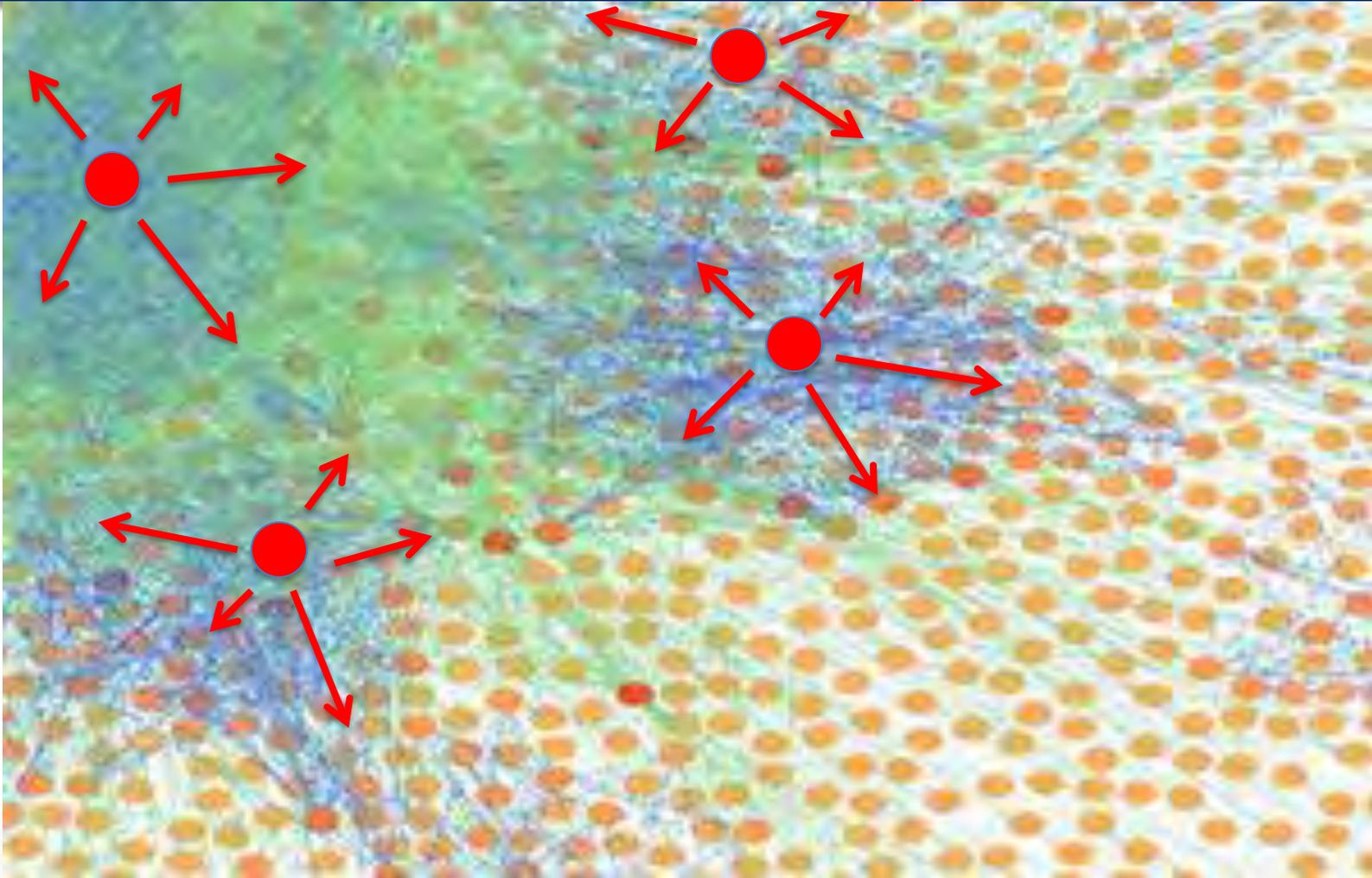
Source: Rogers, 1995

# Essential Nature of Scale in Agriculture



Source: [http://www1.eere.energy.gov/solar/sunshot/seeds\\_sandia.html](http://www1.eere.energy.gov/solar/sunshot/seeds_sandia.html)

# Essential Nature of Scale in Agriculture

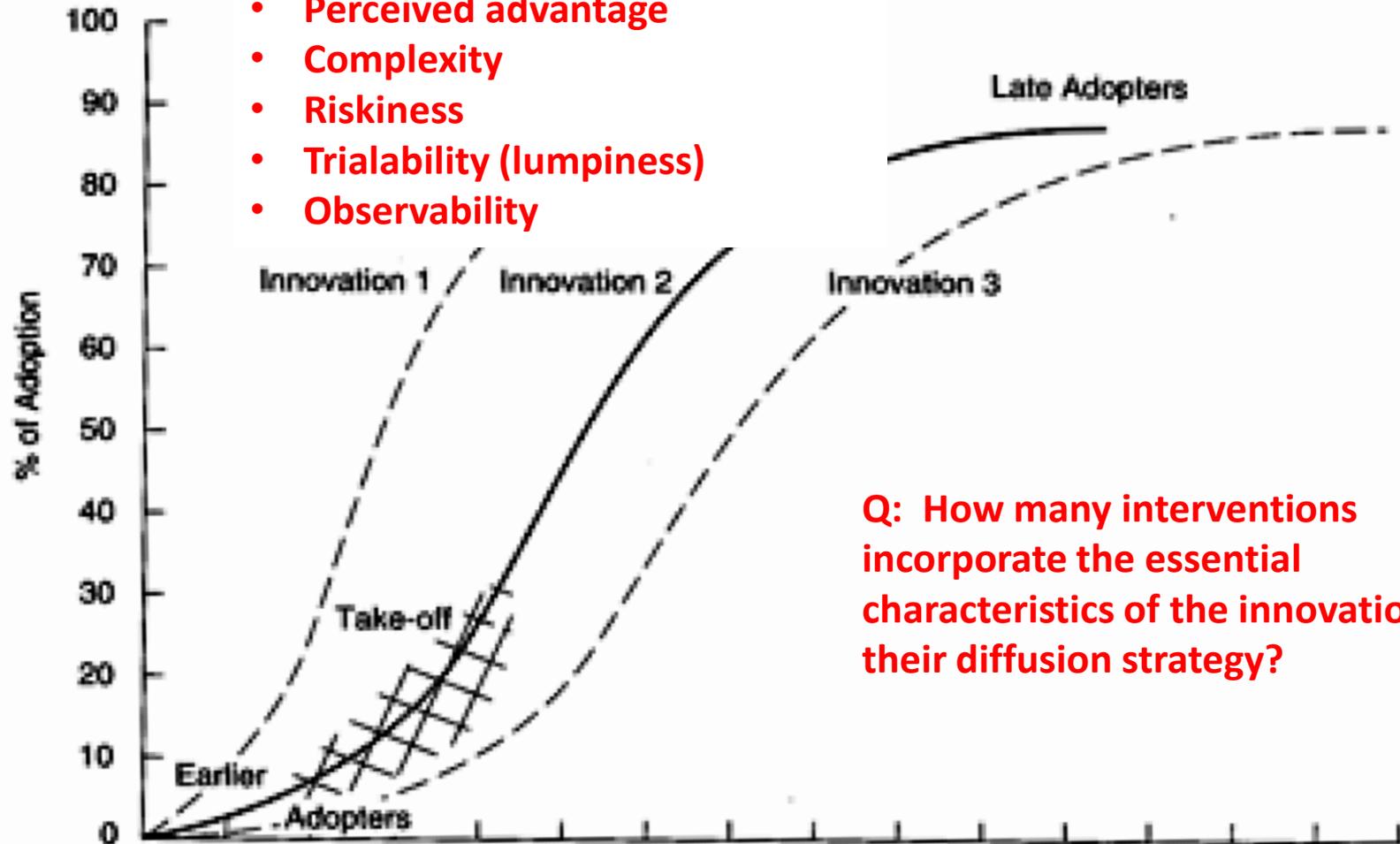


Source: [http://www1.eere.energy.gov/solar/sunshot/seeds\\_sandia.html](http://www1.eere.energy.gov/solar/sunshot/seeds_sandia.html)

# Rates and Extent of Diffusion

## INNOVATION CHARACTERISTICS

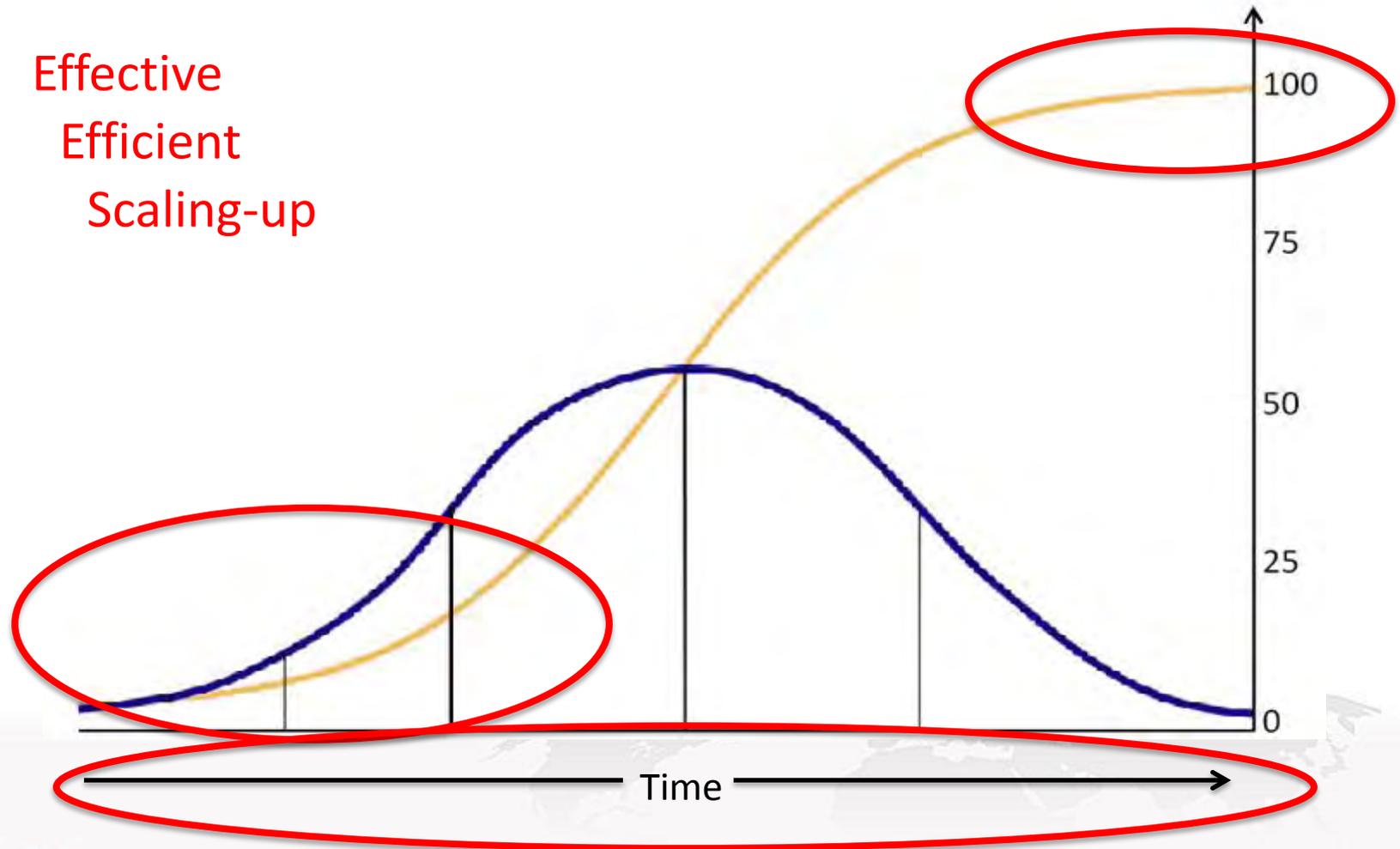
- Perceived advantage
- Complexity
- Riskiness
- Trialability (lumpiness)
- Observability



**Q: How many interventions incorporate the essential characteristics of the innovation into their diffusion strategy?**

# A Scaling (learning) Process Approach

Effective  
Efficient  
Scaling-up



# Scaling the Update of Innovations through Sustainable Agricultural Extension

- Using what we know about human behavior to support behavior change;
- Using what we know about the diffusion of innovations to design projects;
- Sustaining efforts long enough to allow 'scaling' to happen;
- Working at scale, to achieve impacts of scale.

Not either, or...it's all, and.

Applying what we already know is itself an innovation

# This presentation was given by:

Brent M. Simpson

Michigan State University

on behalf of the Modernizing Extension and Advisory  
Services (MEAS) Project



# Modernizing Extension and Advisory Services

## Sustainable Financing of Extension Services for the Scaling of Agricultural Innovations: Approaches and Issues

AG Sector Council ~~ USAID Agrilinks

MEAS Webinar

Wednesday, 20 November 2013

# Dr. Paul E. McNamara

Associate Professor, Department of Agricultural & Consumer Economics, University of Illinois at Urbana-Champaign; Project Director, Modernizing Extension and Advisory Services Project (MEAS); and, Extension Specialist, University of Illinois Extension.



# Sustainable Finance -- Quotes

- **“The quality of spending to agriculture is more important than the overall level of spending.”**  
**Akroyd and Smith, 2007, “Review of Public Spending to Agriculture,” p. 20**
- **“...most donors have a strictly ahistorical view of development and they lack an institutional memory.”**  
**Eicher, 1989, “Sustainable Institutions for African Agricultural Development,” p. 12**

# Outline

- **Extension in Large-Scale Agricultural Innovations**
  - **Two examples**
- **Three Stylized Facts on Extension in Large-Scale Agric Innovations**
- **Conceptual Framework**
- **Best Fit Approaches and Examples**
- **Conclusions**

# Extension in Agricultural Innovations – Adoption of Mechanization in US

- **Farm tractors in the US**
  - **1930**      **920,000**
  - **1940**    **1,567,000**
  - **1950**    **3,394,000**
  - **1960**    **4,688,000**
- **Dramatic substitution of mech power for farm labor**
- **US ag productivity increases**
  - **1930s**   **11%**
  - **1940s**   **25%**
  - **1950s**   **20%**
  - **1960s**   **17%**
- **Extension provided training, advocacy, links between researchers and companies and farmers, experimentation**



# Extension in Agricultural Innovations – Green Revolution in Asia

- 1943—1980, a package and program of new technologies for rice and wheat including improved varieties, fertilizer and irrigation and other inputs, extension support, supportive public policies, and rural infrastructure (roads and water infrastructure)
- Extension allowed linkages between researchers and farmers, training and support on application of technology
- Significant levels of public support (15.4% of Asian public spending was on ag in 1972)

Wheat yields in developing countries:  
1950: 500 kg/Ha; 2000: 2500 kg/Ha



Extension helped the Asian Green Revolution target and pull along small-holder farmers in order to reduce poverty

# Innovations at Scale - Three Stylized Facts

- Institutional base of extension and complementary services and inputs along with enabling environment (policy)
  - Many components of a functioning Ag Innovation System
  - Think system and process (treadmill, iterating) rather than one-time push
- Longish time scale of major agricultural innovations
- Audience – the people and their assets
  - Green revolution targeted best regions for irrigated rice and for wheat production (not more difficult rain-fed uplands and more marginal zones)
  - US agric productivity built on base of literate farm population, secure property rights, functioning cooperatives, access to credit, commercial agribusiness involvement and investment, infrastructure, substantial public funding

## Definition –

# The Pluralistic and Varied Nature of Extension Services

- Extension is human capital enhancing education and training, usually delivered in non-formal settings for adult learners
- Includes a wide variety of activities
  - T&V, extending technologies and methods
  - Advisory services to answer farmer questions
  - Non-formal education such as FFS
  - Facilitation extension – organizing groups and then into associations and then businesses

# Conceptual Framework – Public Goods and Toll Goods

- Much of the economic discussion of extension appears to ignore facilitation extension and domains like NRM
- Extension services as toll goods
  - Farm specific information – soils, drainage advice
  - Farmer group specific work
- Wide variety of extension services
  - A continuum from broadcasting information and messages to highly interactive, personalized, services delivered by a trusted intermediary
- Extension services necessarily involve face-to-face or personal communication with farmers, a high degree of discretion
  - Challenges for ensuring performance and quality (Pritchett and Woolcock, 2004)

# Poverty Reduction – The Merit Good Aspect of Extension

- In many countries extension has a targeting dimension of a merit good
  - Terms like “poverty reduction” and the “rural poor”, “marginalized groups” all are evidence of merit good type targeting
  - Chile, an upper middle income country, differential efforts to reach poorer farmers in a contracting scheme

# Small-holder Farmers Value Extension – Value Perspective, Rates of Return

- Social investors (donors, governments) need to know what sort of benefits relative to costs extension programs could generate
- Birkhauser, Evenson, & Feder report a range of rates of return, most between 13% to 80%
- Alston et al. estimate a median rate of return on extension of 62.9% (focus: staple crops extension)
- Holloway and Ehui find that 65 of 168 farm hhs studied would be wtp to pay a fee equal to the cost
- Keynan, Olin and Dinar studied farmer payments of bonuses designed to increase quality and responsiveness of extension
  - All the 17 farmer groups paid the bonuses and continued with the program the following year

# Conceptual Framework – Value Perspective, Rates of Return



- Long tail of success: when assessing the impacts of facilitation extension that develops new farmer groups, farmer business associations, cooperative marketing associations, etc. examine the long tail of impact from the successes

# Conceptual Framework – Political Economy

- Recurrent cost problem
- Projectization of extension
- Derived nature of extension policy in practice (Bates, political economy framework)
  - Important groups include: civil servants, small-scale farmers, large scale and commercial farmers, agro-industries, political parties

# A multitude of alternatives

(modified from Birner and Anderson, 2007 and others)

Delivery Organization	Source of Financing				
	Public Sector	Private Sector Farmers	Private Sector Companies	NGOs	FBOs
Public Sector	Public sector extension	FFS provided by public sector	Private companies contract PS	NGOs contract PS	FBOs contract PS
Private Sector: Companies	Contracting	Fee For Service	Input linked ext., outgrowers	NGOs hire Private	FBOs contract Private
Private Sector: Individual Providers	Contracts, coupons	FFS, Private Service Providers		NGO hires agents	
Third Sector: NGOs	Govt contracts	Farmers pay fees		NGO hires agents, free	
Third Sector: Farmer-Based Organizations	Public support, subsidies for extension	FBO hires agents, FFS		NGO pays agents employed by FBO	Agents hired by FBO providing service to members

# Best Fit Approaches

- Public sector financed and delivered
  - Important approach, at scale
  - Decentralized -- funds going to local level
- Can introduce co-pays/user fees, bonuses, coupons, prizes to strengthen farmer voice in programming
- Explore performance reporting, e-tracking, i-M&E
- Need to examine performance-contracting approaches to decentralization
  - Recent work on public health and primary care relevant to ag extension
  - Community and farmer group mobilization for services

# Best Fit Approaches

- Public sector financed and contractor delivered
  - Common in projects
  - Role for INGOs, local NGOs, private sector contractors, independent extension agents
- Performance contracting
- Coupons
- Need to ensure access for poor farmers and targeting
- Public sector needs capacity building to contract and to serve coordinating role

# Best Fit Approaches

- User-financed and private provider delivered
  - Underway in East and Southern Africa
- Private farm advisor model
- Need to examine targeting and access for poor farmers
- Can be combined with coupons
- Registration/certification role for national association or public sector

# Best Fit Approaches

- Marketing margins financed and private provider delivered
  - Common in export crops and outgrower schemes
  - Often combined with inputs and financing (One Acre Fund and others)
  - Usually not offering advice on other crops and livestock – very focused
  - Impact on farm productivity and incomes needs careful study
  - Targeting and poverty impact?
- Trained input dealers – MANAGE
- Importance of competitive policy and infrastructure so farmers receive benefits

# Conclusions

- Role for public sector extension at scale: financing, staffing, coordinating, delivering
- Need a focus on quality, performance, and the system
- Information and control and reporting systems to match financial flows
- Evidence on value, return, impact, poverty reduction, and agricultural productivity increasing outcomes
- Research and experimentation on alternative forms of contracting, coupons, prizes
- Research on extension provided through agro/vets, outgrower schemes, hub/spoke relationships, export marketers

# Conclusions

- A broad understanding of finance raises a number of considerations and connections
  - How we finance extension shapes the programs and outputs we receive
  - Finance connects to management (control, reporting, budgeting) and to advocacy and resource mobilization
- Where are the good investments in extension in your country or your extension system?
- How can the finance perspective be used to sharpen system performance and mobilize needed resources?

# This presentation was given by:

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on behalf of MEAS

at the Webinar “Scaling Ag Innovations through Extension & Advisory  
Services”

AG Sector Council

USAID

Agrilinks

MEAS [www.meas-extension.org](http://www.meas-extension.org)

on November 20, 2013



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